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died at Santa Barbara on January 23, 1918, after having reached the sixty-third year of his age. Mr. Hazard was well known as an enthusiastic oologist and as a man ever ready to advance the interests of others in this field.

PUBLICATIONS REVIEWED

A STUDY | OF THE | INCUBATION PERIODS |
OF | BIRDS—|WHAT DETERMINES THEIR |
LENGTHS? |—By | W. H. BERGTOLD, M. D.,
M. Sc. | Member of the American Ornitholo-
gists' Union | The Kendrick-Bellamy Co. |
Denver, Colorado | 1917 (our copy received
June 20, 1917); 8vo, pp. 1-109.

The above title brings to the attention of bird observers a field of observation in which, as the author well states, there is "a lamentable dearth of information". Nevertheless the data finally gathered and here presented is really of astonishing quantity (though not always of acceptable degree of accuracy), and has proven sufficient for the establishment tentatively of several interesting conclusions. Among these are that length of incubation is not directly or closely correlated with either size of the bird, or size of the egg, or size of the yolk, or degree of precocity of the young, or age of the female, or longevity of the species. There is, however, a "true" incubation period (secured by allowing for all factors which serve to prolong the process abnormally) which is constant and characteristic of each species, and this is directly correlated with the body temperature—the higher the temperature the shorter the incubation period. Now, such data as are available seem to show that the lower or more generalized a bird in the phylogenetic scale, the lower its temperature; so that, again, the incubation period allies itself in degree of abbreviation directly with degree of phylogenetic advancement of the species concerned.

The above brief epitome is inadequate to give a fair idea of Bergtold's discussion of the many phases of the subject involved, and we can only recommend that interested readers take the first opportunity to fully apprise themselves of the contents of the book.

Referring again to lack of information, the following are the facts called for by Bergtold, if further enquiries along this and related lines are to be pursued fruitfully: Exact length of incubation period of birds and reptiles; exact length of incubation of birds in polar and tropical regions; the period of viability of birds' eggs; the weights of birds, preferably of the breeding female; the

weights of birds' eggs; the effects of super-heating on birds' and reptiles' eggs; the optimum incubation temperatures of birds' and reptiles' eggs; bird temperatures; temperatures under the incubating bird; reptile temperatures; minutiae of bird physiology.

Egg-collectors, skin-collectors, and nature students of the opera-glass contingent are here on common ground in that all are in positions to contribute importantly to the stock of facts needed.—J. GRINNELL.

THE DISTRIBUTION OF BIRD-LIFE IN COLOMBIA; A CONTRIBUTION TO A BIOLOGICAL SURVEY OF SOUTH AMERICA. By FRANK M. CHAPMAN. Bulletin of the American Museum of Natural History, vol. xxxvi, 1917, pp. i-x, 1-729, 41 plates (some colored), 21 text figs.

The ultimate object of the several years of zoological exploration which the American Museum of Natural History has been prosecuting in South America is, we are told, the discovery of the geographic origin of South American life. As a step toward the attainment of this end the publication here reviewed is devoted to a careful study of the birds of a relatively restricted part of the continent, in their racial variation and geographic distribution—of the "life zones" and "faunal areas", and the species and subspecies inhabiting them. As explanatory of the peculiar interest attached to the study of the birds of Colombia, the chapter devoted to "a review of Colombian ornithology" is briefly descriptive of the "Bogota" collections, productive of so many new species of birds in years gone by, pointing out the value of these collections in the early study of the birds of this region and their absolute uselessness in a present day investigation relative to the distribution of species. Californian ornithologists will be especially able to appreciate the points here made, as to the necessity for absolute accuracy in the labelling of specimens.

The life zones recognized by the author in Colombia are four in number, being, in ascending order, Tropical, Subtropical, Temperate, and Paramo, the last mentioned being a term "locally applied to any treeless region lying above 10,000 feet". Some important conclusions as regards the existing fauna of the region are as follows: That the birds of every zone above the tropics have been derived from a lower level; that the Temperate zone of the Colombian Andes reaches sea level farther south in South America and that its life is derived in part by zonal, in part by latitudinal extension and is

more recent than that of the Subtropical zone; that the Paramo zone reaches sea level still farther south and that its life is derived by latitudinal extension and is more recent than that of the Temperate zone; and that the present trend of the distribution of life upon the continent is northward, few boreal species having entered Colombia in recent geologic times. In other words, the hypothesis advanced is that the enormous mountain ranges forming so large a part of the Colombian region arose as a gradually increasing elevation forced upwards from a tropical base, the lofty summits with their necessarily cooler climate being populated by the latitudinal extension of the range of species from regions to the northward and to the southward having similar climates, and also by "altitudinal extension as the pressure of life from immediately contiguous regions below forced species upward, the more adaptable of which survived".

Three of the four zones are divided into faunal areas. In the Tropical zone five are recognized, as follows: Colombian-Pacific, Cauca-Magdalena, Caribbean, Orinocan, Amazonian. In the subtropical zone there are two, West Andean and East Andean. The Temperate zone has strongly marked humid and arid divisions but does not appear to be otherwise divided. The Paramo is uniform in character.

Each of these zonal and faunal divisions is treated in detail, the points made being illustrated with a wealth of half-tones, maps, and diagrams, and tables of bird species. Not the least interesting and instructive of these graphic features are the maps illustrating the ranges of representative species.

Part one (pp. 3-169) is devoted to this descriptive and philosophic matter. Part two, with some introductory and explanatory matter, largely relative to classification and nomenclature, contains the systematic list of the species concerned. For the most part the comments on each are extremely brief, frequently a mere statement of localities, but even so, the 1285 species and subspecies included necessarily make a rather bulky volume.

The whole report is one of intense interest, and the facts and theories concerned are presented in a most attractive and convincing manner. The volume fairly teems with suggestions of problems to be followed up, in addition to the many ingenious and satisfactory explanations advanced for conditions as encountered. While naturally much

of this does not touch directly upon work in North America, still one comes across occasional statements of fact or opinion that have a bearing upon our own studies as well as generalizations that are applicable everywhere in faunal research.

It is interesting to note that, quite different from conditions in North America, no evidence of altitudinal migration in any species was obtained in this country of strongly contrasting mountains and valleys. The explanation of this is doubtless to be found in the equable climatic conditions of each zone the year through. It is not so easy, however, to find an explanation of the fact that the many North American species encountered here in their winter home, pay absolutely no attention to faunal or zonal boundaries. This is decidedly at variance with conditions along the Pacific Coast of the United States, where the ranges of winter visitants from Alaska and northwestern Canada are strongly influenced by local climatic conditions.

Of the many North American birds wintering in or passing through Colombia nearly all are eastern species. The Western Wood Pewee (*Myiochanes richardsoni*) is mentioned as the only bird of the western United States, but the systematic list of species also includes *Chordeiles acutipennis texensis* and *Myiodynastes luteiventris*, both of which occur in that region, whether or not the Colombian migrants individually hail from within our boundaries. It seems curious to read of a subspecies of our familiar Black Phoebe as "an inhabitant of the Tropical Zone but working up the streams to the lower border of the Subtropics", for one would expect it rather amid temperate zone surroundings.

Dr. Chapman has much to say regarding classification and nomenclature, as well as the treatment of genera and subspecies, and what he says is clearly and vigorously expressed and worthy of careful consideration. In his strong advocacy of personal field work in a study of this sort he assumes a position that will certainly not be combated by any active western ornithologist. In fact it is a little difficult at this day to realize the need of argument to uphold such a self-evident proposition.

It is but a thankless task to pick out minor errors in a work of such high general standard, and really the volume under discussion forms a most unprofitable field for such search. As an example of how errors creep in despite most careful proof reading,

however, attention may be called to the caption explanatory of fig. 21 (opposite p. 610), where there is evidently a mix-up of some sort. Then too, as regards the sentence at the foot of page 178, summing up the evidence in a peculiarly interesting line of argument, while the point the author wishes to make is evident enough, the wording is so vague as to bear an interpretation almost contrary to the meaning that it is intended to convey.—H. S. SWARTH.

ROBERT CUSHMAN MURPHY'S "NATURAL HISTORY OBSERVATIONS FROM THE MEXICAN PORTION OF THE COLORADO DESERT" (Abstract of Proceedings, Linnaean Society of New York, nos. 24-25, 1917, pp. 43-101, pls. I-VI) is well worth the reading by anyone who is interested in the desert, be he traveller or naturalist. Murphy's "Narrative" of his month's trip south from Calexico in search of antelope for the Brooklyn Museum will furnish much information of value to the prospective visitor to that or any similar region; while the more or less blasé frequenter of desert country will have his memories pleasingly vivified by the accurate and lively description of day-by-day experiences. Some of the comments, such as those upon the psychology of the burro, and the fearsomeness of rattlesnakes, verge upon the naïve, but usually save themselves by reason of refreshing allusions, often of keen aptness. One's first experience in a new land is certainly the one to take advantage of in recording impressions, and Murphy proves himself to have realized this to good purpose—aided by a ready pen.

Ornithologically, we find that there are many good field observations scattered through the narrative, as also in the "Annotated List of the Birds" (pp. 80-100); for example, upon the apparent ability of the Desert Quail to go entirely without water. This seems to be a really new idea, and should be followed up by others in a position to ascertain the facts. The "List" numbers 134 species and is based not only upon the author's own observations but also on a previous paper by Stone and Rhoads (Proc. Acad. Nat. Sci., Phila., 1905, pp. 676-690). The only serious criticism we can make of Murphy's work is that he should have taken Rhoads' sight determinations at face value and thus perpetuated a lot of exceedingly doubtful records (see CONDOR, VIII, 1906, p. 78). Also why not as well have taken into account W. W. Price's article on "Some Winter Birds of the Lower Colorado Valley" (*Bull. Cooper Orn. Club*, I,

1899, pp. 89-93), which covered nearly the same region?—J. GRINNELL.

BIRDS OF AMERICA; Editor-in-Chief, T. GILBERT PEARSON, National Association of Audubon Societies. Consulting Editor, John Burroughs. Managing Editor, George Gladden. Associate Editor, J. Ellis Burdick. Special Contributors, Edward H. Forbush, William L. Finley, Herbert K. Job, L. Nelson Nichols. Artists, L. A. Fuertes, R. B. Horsfall, R. I. Brasher, Henry Thurston. Nature Lovers Library [vols. I-III]. The University Society Inc.; New York [1917]; 4to, vol. I, pp. xviii+272; vol. II, pp. xiv+271; vol. III, pp. xviii+289; pls. five+106, numerous half-tone illustrations and some line drawings, all these being scattered throughout the three volumes. Issued about November 1, 1917.

I suppose there is no copyright on the title "Birds of America". Even so, it seems a sacrilege that this distinctive title, once used with authority, should be now appropriated for a work which falls far behind what such a title ought to cover. In the first place, the present book deals with any approach to adequacy only with birds of the eastern half of North America north of the Mexican line; and in the second place, the treatment is at best, save pictorially, superficial and far from "complete", though this word is used rather blatantly in the claims for the work set forth in the Preface, Introduction, and announcements. From a strictly scientific point of view I believe that this work, instead of advancing the previous standard of ornithological output, or even maintaining it, tends to lower it.

It is from the western viewpoint that the book here under review is most seriously at fault. The text, almost wherever it deals with exclusively Californian or western birds, is characterized by inconsequential verbiage where it is not actually misleading or even erroneous. I will cite some specific illustrations.

The Mountain Chickadee, so widespread from the Rocky Mountains westwardly, is dismissed (vol. III, p. 212) with one paragraph as "very similar" to its "eastern relative"! The account of our common California Brown Towhee (vol. III, p. 61, under "Cañon Towhee") is simply nonsense. The Abert Towhee (same volume, p. 62) is accorded just six lines of 10-point comment, the first sentence of which is: "Despite the fact that the Abert's Towhee is the largest of the plain Towhees he is extremely shy."